

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A liquid container for a liquid ejection device comprising:

a liquid supply port for supplying liquid to a liquid ejection head,

a flexible member deformable in accordance with an amount of remaining liquid contained in the liquid container;

a vibration activating and detecting unit provided on a first surface of said liquid container, for emitting a vibration to said liquid; and

a rigid member provided on a second surface of said liquid container so as to be opposed to said vibration activating and detecting unit;

wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration activating and detecting unit which depends on a distance between said vibration activating and detecting unit and said rigid member; and

wherein the distance between said vibration activating and detecting unit and said rigid member is not predetermined prior to said ~~determination~~ detection.

2. (original): A liquid container for a liquid ejection device according to claim 1, wherein said vibration activating and detecting unit includes a substrate capable of maintaining a constant shape irrespective of deformation of said liquid container.

3. (previously presented): A liquid container for a liquid ejection device according to claim 1, wherein:

a through-hole is formed in said liquid container at a location corresponding to a vibration region of said vibration activating and detecting unit; and

said vibration activating and detecting unit is provided on a substrate having a recess into which liquid of said liquid container flows, and a vibration is emitted from said vibration activating and detecting unit to said liquid via said recess.

4. (original): A liquid container for a liquid ejection device according to claim 1, wherein said rigid member is stuck to an outer or inner surface of said liquid container.

5. (previously presented): A liquid container for a liquid ejection device according to claim 1, wherein a plurality of said vibration activating and detecting units, and a plurality of said rigid members, are arranged in a direction in which a liquid level of liquid in said liquid container changes.

6. (previously presented): A liquid container for a liquid ejection device according to claim 2, wherein an adhesive layer, with which said substrate is liquid-tightly fastened to said liquid container, is formed on a front or back surface of said substrate.

7. (original): A liquid container for a liquid ejection device according to claim 1, wherein said liquid container is housed in a hard case, and said rigid member is formed with said hard case.

8. (previously presented): A liquid container for use in a liquid ejection device according to claim 1, wherein said liquid container is housed in a hard case which has a raised portion in a predetermined region located apart from said liquid supply port in a region of said liquid container which serves as a bottom surface when said liquid container is set in the liquid ejection device.

9. (previously presented): A liquid container for use in a liquid ejection device according to claim 1, wherein conductive patterns are formed on a surface of said liquid container, and said conductive patterns are connected to said vibration activating and detecting unit.

10. (previously presented): A liquid container for a liquid ejection device comprising:
a liquid supply port for supplying liquid to a liquid ejection head,
a bag-like flexible member deformable in accordance with an amount of remaining liquid contained therein;

a vibration activating unit provided on a first surface of said liquid container, for emitting a vibration to said liquid; and

a vibration detecting unit provided on a second surface of said liquid container, wherein the first and second surfaces are opposite to each other;

wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration detecting unit.

11. (previously presented): A liquid container for use in a liquid ejection device according to claim 1, wherein at least one of the vibration activating and detecting unit and the rigid member are movable in relation to the other.

12. (previously presented): A liquid container for use in a liquid ejection device according to claim 10, wherein at least one of the vibration activating unit and the vibrating detecting unit are movable in relation to the other.

13. (previously presented): A liquid container for use in a liquid ejection device according to claim 1, wherein said liquid container is housed in a hard case, and the vibration activating and detecting unit is pressed on the first surface of the liquid container via an urging unit connected to the hard case.

14. (previously presented): A liquid container for use in a liquid ejection device according to claim 1, further comprising a thin plate arranged on at least one of the first and second surfaces of the liquid container to provide stability to the at least one of the first and second surfaces as the ink is drained from the ink container.

15. (previously presented): A liquid container for a liquid ejection device, comprising:

a liquid supply port for supplying liquid to a liquid ejection head,
a flexible member deformable in accordance with an amount of remaining liquid contained in the liquid container;
a vibration activating and detecting unit, provided on a first surface of said flexible member, for emitting a vibration to said liquid; and
a rigid member provided on a second surface of said flexible member, wherein the first and second surfaces are opposite to each other,
wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration activating and detecting unit.

16. (previously presented): A liquid container for a liquid ejection device according to claim 15, wherein said vibration activating and detecting unit includes a substrate capable of maintaining a constant shape irrespective of deformation of said flexible member.

17. (previously presented): A liquid container for a liquid ejection device according to claim 15, wherein:

a through-hole is formed in said flexible member at a location corresponding to a vibration region of said vibration activating and detecting unit; and
said vibration activating and detecting unit is provided on a substrate having a recess into which liquid of said flexible member flows, and a vibration is emitted from said vibration activating and detecting unit to said liquid via said recess.

18. (previously presented): A liquid container for a liquid ejection device according to claim 15, wherein said rigid member is stuck to an outer or inner surface of said flexible member.

19. (previously presented): A liquid container for a liquid ejection device according to claim 15, wherein a plurality of said vibration activating and detecting units, and a plurality of said rigid members, are arranged in a direction in which a liquid level of liquid in said flexible member changes.

20. (previously presented): A liquid container for a liquid ejection device according to claim 16, wherein an adhesive layer, with which said substrate is liquid-tightly fastened to said flexible member, is formed on a front or back surface of said substrate.

21. (previously presented): A liquid container for a liquid ejection device according to claim 15, wherein said flexible member is housed in a hard case, and said rigid member is formed with said hard case.

22. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, wherein said flexible member is housed in a hard case which has a raised portion in a predetermined region located apart from said liquid supply port in a region of said flexible member which serves as a bottom surface when said flexible member is set in the liquid ejection device.

23. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, wherein conductive patterns are formed on a surface of said flexible member, and said conductive patterns are connected to said vibration activating and detecting unit.

24. (previously presented): A liquid container for a liquid ejection device, comprising:
a liquid supply port for supplying liquid to a liquid ejection head,
a bag-like flexible member deformable in accordance with an amount of remaining liquid contained therein;

a vibration activating unit provided on a first surface of said flexible member, for emitting a vibration to said liquid; and

a vibration detecting unit provided on a second surface of said flexible member, wherein the first and second surfaces are opposite to each other;

wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration detecting unit.

25. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, wherein the vibration characteristic varies based on a distance between said vibration activating and detecting unit and said rigid member.

26. (previously presented): A liquid container for use in a liquid ejection device according to claim 24, wherein the vibration characteristic varies based on a distance between said vibration activating unit and said vibrating detecting unit.

27. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, wherein at least one of the vibration activating and detecting unit and the rigid member are movable in relation to the other.

28. (previously presented): A liquid container for use in a liquid ejection device according to claim 24, wherein at least one of the vibration activating unit and the vibrating detecting unit are movable in relation to the other.

29. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, wherein said flexible member is housed in a hard case, and the vibration activating and detecting unit is pressed on the first surface of the flexible member via an urging unit connected to the hard case.

30. (previously presented): A liquid container for use in a liquid ejection device according to claim 15, further comprising a thin plate arranged on at least one of the first and second surfaces of the flexible member to provide stability to the at least one of the first and second surfaces as the ink is drained from the ink container.

31. (previously presented): A liquid container for a liquid ejection device, comprising:
a hard outer case and an ink bag contained within the hard outer case, the ink bag
comprising:

a liquid supply port for supplying liquid to a liquid ejection head; and a flexible member
deformable in accordance with an amount of remaining liquid contained in the liquid container;

a vibration activating and detecting unit, provided on a first surface of said flexible
member, for emitting a vibration to said liquid; and

a rigid member provided on a second surface of said flexible member, wherein the first
and second surfaces are opposite to each other,

wherein an amount of remaining liquid is detected based on a vibration characteristic of
said vibration activating and detecting unit.

32. (previously presented): A liquid container for a liquid ejection device according to
claim 31, wherein said vibration activating and detecting unit includes a substrate capable of
maintaining a constant shape irrespective of deformation of said flexible member.

33. (previously presented): A liquid container for a liquid ejection device according to
claim 31, wherein:

a through-hole is formed in said flexible member at a location corresponding to a
vibration region of said vibration activating and detecting unit; and

said vibration activating and detecting unit is provided on a substrate having a recess into which liquid of said flexible member flows, and a vibration is emitted from said vibration activating and detecting unit to said liquid via said recess.

34. (previously presented): A liquid container for a liquid ejection device according to claim 31, wherein said rigid member is stuck to an outer or inner surface of said flexible member.

35. (previously presented): A liquid container for a liquid ejection device according to claim 31, wherein a plurality of said vibration activating and detecting units, and a plurality of said rigid members, are arranged in a direction in which a liquid level of liquid in said flexible member changes.

36. (previously presented): A liquid container for a liquid ejection device according to claim 32, wherein an adhesive layer, with which said substrate is liquid-tightly fastened to said flexible member, is formed on a front or back surface of said substrate.

37. (previously presented): A liquid container for a liquid ejection device according to claim 31, wherein said rigid member is formed with said hard case.

38. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, wherein said hard case has a raised portion in a predetermined region

located apart from said liquid supply port in a region of said flexible member which serves as a bottom surface when said flexible member is set in the liquid ejection device.

39. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, wherein conductive patterns are formed on a surface of said flexible member, and said conductive patterns are connected to said vibration activating and detecting unit.

40. (previously presented): A liquid container for a liquid ejection device, comprising:
a hard outer case and an ink bag contained within the hard outer case, the ink bag comprising:

a liquid supply port for supplying liquid to a liquid ejection head;
a flexible member deformable in accordance with an amount of remaining liquid contained therein;
a vibration activating unit provided on a first surface of said flexible member, for emitting a vibration to said liquid; and
a vibration detecting unit provided on a second surface of said flexible member, wherein the first and second surfaces are opposite to each other,
wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration detecting unit.

41. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, wherein the vibration characteristic varies based on a distance between said vibration activating and detecting unit and said rigid member.

42. (previously presented): A liquid container for use in a liquid ejection device according to claim 40, wherein the vibration characteristic varies based on a distance between said vibration activating unit and said vibrating detecting unit.

43. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, wherein at least one of the vibration activating and detecting unit and the rigid member are movable in relation to the other.

44. (previously presented): A liquid container for use in a liquid ejection device according to claim 40, wherein at least one of the vibration activating unit and the vibrating detecting unit are movable in relation to the other.

45. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, wherein the vibration activating and detecting unit is pressed on the first surface of the flexible member via an urging unit connected to the hard case.

46. (previously presented): A liquid container for use in a liquid ejection device according to claim 31, further comprising a thin plate arranged on at least one of the first and

AMENDMENT UNDER 37 C.F.R. § 1.312
U.S. Appl. No. 10/669,638
Attorney Docket No.: Q77712

second surfaces of the flexible member to provide stability to the at least one of the first and second surfaces as the ink is drained from the ink container.

47. (previously presented): A liquid container for a liquid ejection device according to claim 1, wherein said liquid container is a flexible bag.